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27-29 July 1983



REPORT OF SECOND MEETING
WITH AGENCIES WHICH SPONSOR
REGIONAL ACTIVITIES IN SCIENCE AND TECHNOLOGY
Curaçao, Netherlands Antilles
Tuesday 26 July 1983



UNITED NATIONS

ECONOMIC COMMISSION FOR LATIN AMERICA Office for the Caribbean

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REPORT OF SECOND MEETING
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BACKGROUND

1. The First Meeting of Agencies which sponsor regional activities in Science and Technology was convened by the Caribbean Council for Science and Technology (CCST) on 2 November 1982 in Jamaica. One of the decisions emanating from the Meeting was that the CCST should convene an Inter-Agency Meeting immediately prior to its Annual Plenary Session, as this would be an ideal forum to continue dialogue and collaborative activity and to achieve meaningful interaction between agencies and the member countries in which they operate.

As the Third Plenary Session of CCST was scheduled for 27-29 July 1983 in Curaçao, Netherlands Antilles, the Second Inter-Agency Meeting was convened on 26 July 1983.

ATTENDANCE

2. The following Agencies and Organizations with interests in regional Science and Technology activities were present:

Board on Science and Technology for
International Development (BOSTID)
Caribbean Community Secretariat (CARICOM)
Caribbean Development Bank (CDB)
Inter-American Institute for Co-operation
on Agriculture (IICA)
Intergovernmental Oceanographic Commission (IOC)
International Development Research Centre (IDRC)
Organización Latinoamericana de Energía (OLADE)
Organization of American States (OAS)
Pan American Health Organization/World Health
Organization (PAHO/WHO)

United Nations Centre for Science and Technology for
Development (UNCSTD)

United Nations Economic Commission for Latin America
(ECLA)

United Nations Educational, Scientific and Cultural
Organization (UNESCO)

United Nations Industrial Development Organization
(UNIDO)

United Nations University (UNU)

University of the West Indies (UWI)

United States Agency for International Development
(USAID)

World Meteorological Organization (WMO)

3. In his introductory remarks the Chairman (CCST) welcomed all the participants^{1/} and gave a brief history of the events which established the Inter-Agency Meeting as an annual activity in the CCST calendar.

Adoption of the Agenda^{2/}

(Agenda Item 1)

4. The agenda proposed in Document No. CDCC/CCST/83/8 was adopted subject to the correction that the title of Item 5 be changed to "Report on the First Meeting of CARICOM Ministers responsible for Science and Technology".

Report of the First Meeting of Agencies
which sponsor Regional Activities in Science and Technology
Document No. CDCC/CCST/83/2

(Agenda Item 2)

5. The First Meeting of Agencies was held in Jamaica on 2 November 1982. The Report contained in Document No. CDCC/CCST/83/2 was formally presented by the Chairman.

Matters Arising

(Agenda Item 3)

6. In accordance with a recommendation from the First Meeting, a document had been prepared which itemized the Science and Technology activities of various Agencies in the region. Discussion of the document was postponed to Item 6 on the Agenda.

^{1/} Annex I

^{2/} Annex II

Statement by Chairman (CCST)

(Agenda Item 4)

7. The Chairman informed the Meeting that most of his remarks under this item were already mentioned in his introductory statement, and in the interest of time he would proceed to the next Agenda Item.

Report on the First Meeting of CARICOM Ministers

Responsible for Science and Technology

Document No. CDCC/CCST/83/7

(Agenda Item 5)

8. The First Meeting of CARICOM Ministers with responsibility for Science and Technology took place in Kingston, Jamaica on 6-7 April 1983. The CCST attended the Meeting as an Observer and had prepared a Report (Document No. CDCC/CCST/83/7) on the main decisions taken at that Meeting which would impact on the CCST Work Programme. This document was formally presented by the Secretariat.

Many of the questions revolved around the role and relationship of the Economic Commission for Latin America (ECLA), the Caribbean Development and Co-ordination Committee (CDCC), the Caribbean Council for Science and Technology (CCST), the Caribbean Community Secretariat (CARICOM) and its Interim Co-ordinating Committee (ICC).

The Chairman referred the Meeting to the CDCC Focus Vol. 3 No. 4 of August 1980, which outlined the ECLA/CDCC/CCST relationships as well as the functions of CCST, particularly as the CCST included members from the wider Caribbean than were represented under CARICOM. He explained that the Annual Inter-Agency Meeting provided a perfect forum for informal co-ordination of Agency activity, in accordance with priorities which were established at policy level. The CARICOM Ministers had identified certain priorities in the course of their meeting, and had established an Interim Co-ordinating Committee (the ICC) as a temporary mechanism to provide them with advice about the possible options and directions to be taken to ensure that Science and Technology was coherently integrated within the strategy for development in the region.

Discussion ensued on the likely relationships between the ICC and the CCST. From this discussion it became apparent that, as a short-term strategy, CCST should prepare a summary of these deliberations for the forthcoming meeting of the Interim Co-ordinating Committee (ICC) in Barbados.

Report on Phase 1 of the
CCST/Agency Collaborative Programme

(Agenda Item 6)

9. One of the decisions emanating from the First Meeting with the Agencies was that a Document should be prepared which would provide information on the Agencies which supported regional activities in Science and Technology, the areas in which they were involved, and the extent of their support. Dr. Dennis Irvine, the UNESCO Regional Consultant in Science and Technology had been requested by CCST to undertake the assignment, and he had prepared the Document No. CDCC/CCST/83/17. This document was circulated as "An analysis of Science and Technology Projects/Programmes supported by Agencies in the Caribbean". Dr. Irvine was asked to introduce the document.

In his presentation, Dr. Irvine pointed out that the document was based on an analysis of the questionnaires sent to all Agencies supporting Science and Technology activity at national as well as regional level. As only eleven of these Agencies had responded, he cautioned that the information he presented was incomplete, and the document would have to be revised and updated at reasonable intervals in the future. However, the information obtained so far indicated certain trends. For instance, it was clear that a great deal of time, money and honest effort were being devoted to several programmes and projects which generally lacked cohesion, and which often seemed to reflect mainly the internal policies and perspectives of individual Agencies. The time seemed opportune for the region as a whole to question why certain projects were being undertaken, what were their objectives and what eventual benefits would accrue to the region. He was of the opinion that the lack of cohesion existed because there was no well defined regional policy on Science and Technology.

The meeting welcomed the Document as a first step in providing an indication of the general direction in which Agencies, Governments and Institutions might move so as to formulate a policy to determine not only the Science and Technology activity to be undertaken, but also the resources it would require.

The meeting expressed sincere thanks to Dr. Irvine for his efforts in collecting and analysing the data and recommended that work should continue on updating the document. Those Agencies which had not yet responded to the questionnaire were urged to do so as early as possible.

Presentation of Reports/Statements
by Agency Representatives

(Agenda Item 7)

10. The Representatives from the various Agencies made oral presentations of their activities being supported in the Caribbean. The relevant texts and summaries are included in the Annexes III-XI.

"Discussion of modalities for further
co-ordination and rationalization of
Science and Technology activities within the Region"

(Agenda Item 8)

11. The discussion on this issue was frank and wide-ranging, as the Representatives articulated the various policy and political considerations which usually impacted on decisions in Science and Technology. Only a summary of the main points is presented below in the items (i) to (vi).

- (i) The very establishment of CCST and the elaboration of its statutes presuppose a political will to co-ordinate the regional activities in Science and Technology. This co-ordination should involve all resources - human, financial and physical, and should lead to the design and the execution of projects. However, at this stage of the Council's development, the CCST should consciously limit its role to formulating policy.

- (ii) Many agencies will continue to act independently and in response to national requests for assistance. A conscious decision to work through CCST would need to be made by all the Agencies.
- (iii) Agencies operating in the region varied by composition and also by mandate. Some were extensions of Government, whilst others were purely non-governmental. Some actually provided funds whilst others provided access to funds; and all were subjected to various constraints and pressures in undertaking their national and/or regional commitments. This factor should be taken into consideration in the light of the expressed desire of the Agencies to work together to formulate and execute a cohesive programme.
- (iv) At present the CCST has no infrastructure to execute major projects in depth, however it does undertake some catalytic activity. Its main focus should be to adumbrate a Policy by which the different role players in Science and Technology could be guided. By convincing the CARICOM Ministers that it could perform, the CCST should aspire to utilize its Specialist Committees/Working Groups to provide the professional and technical advice sought by the Governments. With the aid of CARICOM, the CCST could monitor, evaluate and report on progress in regional activities in Science and Technology.
- (v) One role of CCST could be in channelling assistance to regional projects.
- (vi) In the present financial climate, Regional Governments have shown a strong aversion to establishing new bureaucracies. However, there is a real need for some co-ordinating mechanism which would formulate and advise on a Regional Science and Technology Policy; and it is essential that this mechanism should receive the 'de facto' as well as 'de jure' recognition of Governments.

After extended deliberations, the Meeting decided that:

- a) Dr. Irvine and Dr. Spence should be asked to prepare a short background paper on "Mechanisms for enhancing collaboration between CCST and Agencies which support regional activities in Science and Technology".
- b) CCST should prepare a background paper for discussion at the forthcoming meeting of the Interim Co-ordinating Committee in Barbados.

Any Other Business

12. There being no other business, the Chairman on behalf of participants expressed sincere thanks to the Government and Officials of the Netherlands Antilles for their warm welcome, generous hospitality and their efficient logistic support during the entire meeting.

ANNEX I

AGENDA

1. Adoption of the Agenda
2. Report of the First Meeting of Agencies which sponsor regional activities in Science and Technology
3. Matters arising from the Report
4. Statement by Chairman, CCST
5. Report on the First Meeting of Caribbean Ministers Responsible for Science and Technology
6. Report on Phase 1 of the CCST/Agency Collaborative Programme
7. Presentation of Reports/Statements by Agency Representatives
8. Discussion of modalities for further co-ordination and rationalization of Science and Technology activities
9. Any Other Business

LIST OF PARTICIPANTS

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4. Others

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SUBMISSION OF THE REPRESENTATIVE FROM
THE BOARD ON SCIENCE AND TECHNOLOGY
FOR INTERNATIONAL DEVELOPMENT
(BOSTID)

Activities of Interest to the Caribbean Countries
Board on Science and Technology for
International Development
(BOSTID)

BOSTID is the division of the U.S. National Research Council (the operating arm of the National Academy of Sciences, National Academy of Engineering, and Institute of Medicine) responsible for programmes with developing countries. Established in 1969, BOSTID examines ways to apply science and technology to problems of economic and social development through overseas programmes, studies, advisory committees, and other mechanisms.

Participants in BOSTID activities work with counterpart groups in developing countries. This joint effort is directed toward strengthening local scientific and technological capabilities related to agriculture, environmental planning, energy, forestry, health, natural resource management and conservation, nutrition, water supply and quality, and other areas. Overseas activities also address the national organizational and planning capabilities needed in applying science and technology to development problems and suggest possible scientific and technological solutions.

As part of a private, non-governmental institution, BOSTID relies on scientists and engineers who are selected for their expertise and who contribute their time and services as members of study panels and participants in overseas activities. BOSTID's permanent staff provides professional support and continuity and plans future programmes.

Activities that may have special interest to the countries of the Caribbean include the following:

-- Research Grants. BOSTID operates a programme that awards grants to institutions in developing countries to carry out Research and Development in six research areas. The areas are: Grain Amaranth; Fast-Growing, Nitrogen-Fixing Trees; Biological Nitrogen Fixation; Mosquito Vector Field Studies; Rapid Epidemiologic Assessment; and Diagnosis and Epidemiology of Acute Respiratory Infections in Children. A typical grant would be \$100,000 for a period of 2-4 years. More detailed information about the research areas and about procedures for applying for grants may be obtained by writing:

Dr. Michael P. Greene
Associate Director/Research Grants
Board on Science and Technology for
International Development, JH-214
National Academy of Sciences
2101 Constitution Avenue
Washington, D.C. 20418

-- Publications. BOSTID has an active publications programme that examines development problems of concern to many nations. Study reports are distributed without charge throughout the developing world. Some BOSTID studies such as Priorities in Biotechnology Research for International Development: Proceedings of a Workshop and Postharvest Food Losses in Developing Countries deal with issues and problems of general concern. Other studies concentrate on innovative uses of technologies, plants, and animals in developing countries. Examples of these studies are Ferrocement: Applications in Developing Countries; Firewood Crops: Shrub and Tree Species for Energy Production; The Winged Bean: A High Protein Crop for the Tropics; and Energy for Rural Development: Renewable Resources and Alternative Technologies for Developing Countries. BOSTID studies bring together the latest information on the state of the art and specific work in progress on a topic. For a complete list of BOSTID's publications and how to order them, write:

Ms. Wendy White
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-- Overseas Activities. Over the past 15 years, BOSTID has involved several thousand U.S. scientists, engineers, and social scientists -- and considerably larger numbers from host country institutions -- in joint seminars in Asia, Africa, and Latin America. Small advisory teams have also helped individual countries

with analysis and planning for special projects, and long-term co-operative arrangements have been established with several countries. These overseas activities have focused on a wide range of concerns from specific technical matters such as planning a project to produce ethanol from root crops to policy issues such as scientific and technical manpower planning or linking science planning to the economic planning process.

BOSTID's activities are financially supported from a variety of sources such as the U.S. Agency for International Development, the National Science Foundation, and private foundations.

For general information about BOSTID activities, please write:

Mr. John Hurley
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2101 Constitution Avenue
Washington, D.C. 20418

A SUMMARY OF THE SUBMISSION OF
THE REPRESENTATIVE FROM THE
CARIBBEAN DEVELOPMENT BANK
(CDB)

An Overview of Activities of the
Technology and Energy Unit (TEU) of the
Caribbean Development Bank (CDB), and Progress to Date

Activities of TEU are grouped under three areas. These are -

- (a) a Communications Programme which seeks to establish mechanisms for sharing technology-related information, experiences and skills among specialists in Commonwealth Caribbean countries as a means of developing technological capabilities within the Region, promoting co-ordinated approaches to common problems and maximising benefits to the Region from its scarce skilled manpower and financial resources, in meeting its technology requirements;
- (b) a Technology Development Programme (TDP) which seeks to generate reliable information on the scale and quality of indigenous energy, biological and mineral resources, to analyse opportunities for applying these resources and to demonstrate or adapt techniques for utilising these resources which potentially are widely replicable in CDB member countries and well suited to the needs and circumstances of the countries; and
- (c) an Energy Conservation and Fuel Substitution Programme which seeks to accelerate the adoption of energy conservation measures and promote economic substitution of imported fossil fuels by local energy resources.

In implementing these programmes special emphasis is placed on providing technical support to CDB and its Commonwealth Caribbean member countries in the identification, design and preparation of commercially feasible

investment projects which present opportunities for more efficient or increased use of available resources through the use of non-conventional/alternative techniques.

There is growing recognition and support for TEU's programmes. The Unit is poised to achieve a substantial advancement in its role as a catalytic agent for progressive development of the energy sector and in the creation of durable organic linkages between sources of technical expertise within the Region (and outside), the industrial sector of CDB member countries and CDB. However, the same forces that are largely responsible for this success are themselves contributing to two major problems of TEU, which have to be skillfully managed if full success is to be realised. The two problems are -

- (a) unrealistic expectations of what can be achieved with available resources and time, leading to pressures from within and from outside, to pursue all 'good' ideas at once, making it difficult to devote adequate resources to individual activities; and
- (b) pressure to go for projects that can yield results quickly and are highly visible but which may not necessarily be economically or socially significant in dealing with development problems of the Region.

The Communications Programme has made excellent progress towards achieving its objectives, despite a slow beginning. Operation of two networks on an experimental basis has laid the foundation for a permanent network and shown that the objectives of the programme are achievable and highly desirable. Also, the TEU Newsletter has established itself as the principal source of information on technology and energy-related developments within the Caribbean. To maintain its progress and achieve its objectives fully, the following must be accomplished in the near future -

- (a) additional grant funding for a transitional period and development of a sustainable financing mechanism to support a permanent technical assistance network and information service;

- (b) development of an infrastructure in the Organization of East Caribbean States (OECS) member countries to collect and disseminate technical information and thus take full advantage of services available from TEU;
- (c) elaboration of TEU activities to include extension visits which put TEU in regular contact with users of its technical assistance services; and
- (d) greatly increased flow of information to TEU on technology and energy-related developments/activities in Caribbean countries, by development of mechanisms for systematic documentation and reporting of experiences in these countries.

The TDP has also made good progress in fulfilling its role. Its success can be measured by the extent to which TEU is able to promote deliberate progress through the stages of data gathering/resource assessment, technology development/adaptation, on to successful practical or commercial application of results. This process has already been achieved on a very limited scale and a significant number of TEU sub-projects are now poised to complete the process in the near future. However, progress in the TDP is inherently slow and subject to unpredictable delays, since it involves promotion of a process that is severely constrained and seldom occurs spontaneously. Typically, the major technical barriers to success relate to ways and means of lowering costs and reducing risks associated with the introduction of new techniques, by identifying and demonstrating systems with acceptable operational performance and costs.

Past efforts under the Energy Conservation and Fuel Substitution Programme have been concentrated on opportunities for fuel substitution. TEU has been able to identify a number of opportunities for using local energy resources which are competitive with oil, but generally these have not been pursued by potential users for two reasons -

- (a) because of a lack of adequate energy planning and programming, quick solutions are usually needed and the longer lead-time for putting 'alternative energy' systems into operation precludes them from receiving serious consideration; and
- (b) financing on terms (e.g. small loans, security for loans, grace periods and interest rates) which would make funds more readily accessible to existing small enterprises for changes in their energy equipment has proven difficult to obtain.

Beginning in 1983, a greater effort will be made to promote more efficient use of imported fossil fuels and to deal with the above constraints. Towards this end, an attempt will be made to use the results of analytic studies and resource assessments of TEU and energy needs assessments of CARICOM to formulate and obtain financing for national investment programmes for energy conservation and fuel substitution. The recent decision of CARICOM Heads of Government that ministers responsible for energy meet and prepare a comprehensive Regional Energy Action Plan should generate strong national support for TEU's efforts and give impetus to the energy components of TEU's programmes.

SUBMISSION OF THE REPRESENTATIVE FROM
THE ORGANIZATION OF AMERICAN STATES
(OAS)

The OAS Role in
Science and Technology in the Caribbean

by

Dr. E.M. del Campo,
Executive Secretary for Education, Science and Culture,
Organization of American States

One of the principal goals of the Organization of American States is to foster economic, cultural, scientific and educational development among member countries in Latin America and the Caribbean. To achieve these ends, a particularly effective mechanism is the Department of Scientific and Technological Affairs' programme of technical co-operation with these countries.

The Regional Programme of Scientific and Technological Development currently has two types of programmes under its mandate. First are the "ordinary" projects, which are oriented toward developing capabilities and supporting infrastructure in scientific disciplines. Examples of this type of programme in the Caribbean region are food technology projects in Barbados, Jamaica, Grenada, Saint Lucia and Dominica. These programmes assist countries in developing and upgrading laboratories engaged in food processing and food preservation. Others of similar nature are engineering programmes supporting university curriculum development and research in Trinidad and Tobago, Jamaica, the Dominican Republic and Haiti, and science and technology policy and planning programmes underway in Trinidad and Tobago, Barbados, Jamaica, Haiti and the Dominican Republic.

"Special projects", the second type of programmes in the department, emphasize multinational co-operation to achieve specific research goals. Numerous activities of this nature have been carried out in the Caribbean member states in solar energy, metrology, and technical information for

industry. One of the most successful of these programmes relating particularly to the Caribbean was the special project on utilization of sugar cane residues, in which Trinidad and Tobago, Barbados, Jamaica, the Dominican Republic and Haiti collaborated together with Mexico and Guatemala. This project, bringing as it did researchers from a number of countries, was highly successful in identifying technologies for use of bagasse for animal feed, fermentation of alcohol from sugar cane, and improvement in sugar production technologies.

The Inter-American Council for Education, Science and Culture (CIECC) of the OAS, composed of ministers from OAS member nations, at its meeting in Bogotá in 1980, defined eight priority areas for the coming decade in science and technology in which the OAS must direct its abilities and resources. These are: energy, food technology, marine sciences, renewable natural resources, materials technology, environment, basic and applied science and finally, planning, administration and development of scientific and technological programmes.

It is in these areas that the OAS is currently devoting its energies, not only in the Caribbean, but in the other member states as well.

Eleven Caribbean non-Hispanic states are currently members of the OAS; Antigua and Barbuda, Barbados, the Bahamas, Dominica, Grenada, Haiti, Jamaica, St. Vincent and the Grenadines, Saint Lucia, Suriname and Trinidad and Tobago. The OAS is paying special attention to the newer members of the organization to acquaint them with the rules, regulations and methodology of the OAS in order that they can receive the maximum benefits obtainable.

OAS member states from the Caribbean have taken considerable initiative in the creation of science and technology programming and planning organizations. In 1977, representatives of the OAS member states in the Caribbean met in Santo Domingo and established the Caribbean Science and Technology Co-ordinating Committee for the purpose of co-ordinating activities and pooling resources in science and technology planning. From this first meeting, a task force was set up to recommend specific priority areas for future studies. The Committee decided that one of the highest priority items in the marine resources area was that of oil spill contingency planning. The first step in the implementation of contingency planning was a meeting

of the task force in Port-of-Spain in May, 1979. From this meeting came the framework of a Caribbean regional oil spill control plan.

Subsequent to that conference, numerous planning workshops, technical seminars and other activities have been held on the topic, not only supported by funding from the OAS, but from USAID and the International Maritime Organization. In October of this year, a meeting will be held in Saint Lucia to establish a subregional contingency plan for the Caribbean.

It is important to emphasize the policy-making role of CSTCC for the OAS Caribbean member states. Programmes can only be implemented when they are requested. Due to the scarcity of resources with which the department functions, regional programmes have proved to have much more impact on regional development than national programmes. In this regard, the Committee not only identifies projects to be funded, but participates actively in their subsequent implementation, execution and evaluation.

At the present time, the Committee is overseeing regional programmes in mini-hydro development, a programme on economic biology of under-exploited tropical plants, a project on selection and cultivation of *Leucaena*, an aquaculture project, and a study of post-harvest food loss.

In the coming biennium, the department is also initiating a regional programme on the use of solar drying for agricultural purpose which the Committee also identified as a priority topic. It is expected that a majority of the OAS Caribbean member states will participate in this activity.

Other regional projects supported by the OAS in science and technology include programmes in livestock production, fuel through fermentation, quality control, food technology, information systems, forest resources and solar measurement. These programmes, plus regular programmes and national projects, amount to a total funding level of US\$1.875 million for the 1982-83 biennium for these countries. Approximately the same level of funding is anticipated for the 1984-85 period.

Although most countries have a national planning framework, few have specific programmes based on an explicit strategy designed to improve economic and social conditions for their low-income population. Even fewer have proceeded from the planning to the implementation stage. This task is not an easy one. In its broadest sense, development involves all sectors. It needs to synchronize regional planning. It involves fundamental political and technical considerations and the existing information base is often poor.

There must be the political commitment and will, to go beyond the pilot stage. Most important, there must be continuity, both in terms of programme resources and in management.

The only way that rural and urban poverty can be eliminated on a permanent and sustainable basis is to increase the productivity, of the lower-income strata. But this concern with direct methods to increase productivity, must be supplemented for four reasons:

First, education and health are required to contribute to a higher level of productivity. Most low-income persons have limited access to such public services as education, health care and water supplies, which they need if they are to break out of the vicious circle of low productivity and poverty.

Second, many of the lowest-income population have no physical assets, neither a small farm nor a small industry. The only "assets" they possess are their own two hands and their willingness to work. In such a situation, the development of human resources through education and health programmes is an essential tool to increase their productivity.

Third, it is not enough to enable those in the low-income brackets to earn a reasonable income. They also need goods and supplies and services, on which to spend it. Markets do not always supply these items, particularly those of public services. Expansion and redistribution of public service become essential if basic needs are to be met.

Finally, it may take a long time to increase the productivity of those in the lowest-income category to a level where they can afford at least the minimum requirement of socio-economic needs for a productive life. In the interim period, some groups may need short-term subsidy projects.

In order to incorporate goals for meeting the socio-economic needs in an operational programme, three distinct steps are necessary. First, all developing countries should formulate their own national development

plans for meeting the needs of their population over a defined period of time. Naturally, the priority that each country gives to meeting these needs and the time frame within which it plans to achieve this objective will vary widely, depending on the state of economic development, resource bases, and political and social constraints. International targets should be devised as an aggregation of these national plans and not as indefinite estimates.

In the final analysis, the initiative for fulfilling the socio-economic needs as the principal objective, rests entirely with the countries. The weight they give to this objective is their choice. The international community cannot be far ahead of the national governments. It can afford help. It can give the right signals in development assistance and technological policies. But it can neither define nor dictate targets. It is a national decision in the light of each country's decision to look at the role women are playing - where they, in many cases, are the ones upon whom success really depends. It is each country's decision to recognize the accumulating pressure of poverty and unemployment and the quiet footsteps of revolution that their governments hear in the distance. Without a national commitment to eliminating poverty, no amount of international concern can be of significant value.

We who are here this week, representing countries of the Caribbean, international development organizations and others, have a singular advantage; unlike many areas of the world, there is in this region a relatively large amount of land which can be cultivated. There is, for the most part, a benign climate. The manpower should be ready and able to carry out programmes in development. What is urgently needed is to unify, to the greatest extent possible, technical expertise in the region and to utilize research and development capabilities for the solution of common problems.

In your planning as technical specialists, those of you who represent your countries, please consider as a prime target those who have no resources, who have no access to basic services, and yet are those upon whom you depend for the future of your country.

We of the OAS hope that this meeting signals a beginning of co-operation, of communication, and of the development of resources in the region. In your future actions, remember what Lester Brown said, "We have not inherited the earth from our fathers, we are borrowing it from our children".

SUBMISSION OF THE REPRESENTATIVE FROM
ORGANIZACION LATINO AMERICANA DE ENERGIA
(OLADE)

OLADE Activities in the Caribbean Subregion -
A Statement by the OLADE Representative to the
Second Meeting of Agencies which Sponsor
Science and Technology Activities in the Caribbean

OLADE, being engaged in the area of applied technology in the field of energy, has been working with nine member countries in the Caribbean: Barbados, Cuba, the Dominican Republic, Grenada, Guyana, Haiti, Jamaica, Suriname and Trinidad and Tobago.

The approach to these relationships is direct from OLADE's headquarters to the OLADE Co-ordinator in each member country. The documents I supplied show the objectives and emphasis we place on certain aspects of the energy systems. Suffice it here for me to indicate the current programmes in which the Caribbean countries participate.

1. The main aspects of the Hydrocarbon Programme lie in the area of exploration, and most member countries from the Caribbean are participating.
2. The Coal Programme (including Peat) has scheduled a resource inventory throughout the Region, after which development recommendations will be made to the countries - based on their indigenous resource availability. Active Member Countries are the Dominican Republic, Guyana, Haiti, Jamaica and Suriname.
3. The Hydroenergy Programme intends to measure the hydroenergy potential of each country by means of a common methodology. Suriname and Guyana are active in this effort.
4. In the same vein, the Geothermal Programme is conducting inventories of potential in the Dominican Republic, Haiti and Jamaica.
5. Every country is participating in the Bioenergy Programme in line with its own needs or requests.

6. In the Solar and Wind Energy Programme, projects that will reach the Caribbean countries at a later stage are currently being prepared.

7. OLADE needs insight into the institutional framework of the energy systems of the Caribbean countries. The CCST could prove to be quite helpful in clarifying this matter and in providing this understanding. We will value the assistance of CARICOM and the CDB in this respect, and, to a great extent, follow-up to such co-operation will lead to the inclusion of the Caribbean countries in an energy information network.

8. The energy information system that is being structured at this time, in co-operation with UNESCO, entails the design of a system comprised of national focal points in the member countries, with a regional centre in the OLADE Permanent Secretariat in Quito.

This programme will commence with documentary data and data on institutions and projects, and at a later stage will include numerical data. At this point, I should note the assistance of the EEC in designing the contents of the system, as regards the numerical (statistical) data on energy and related subjects. The network system will be tested soon in four pilot countries and afterwards, I expect in early 1984, the expanded network should be reaching the Caribbean countries with a strong liaison in the Technical Energy Unit of the CDB.

9. In the meantime, the application of energy planning models is being studied for the different subregions of Latin America. For the tests to be run in the Caribbean countries, the necessary energy profiles for each country should be completed or updated. To this end, OLADE has requested assistance from the European Economic Community in Brussels.

10. Two workshops are being prepared in the area of new and renewable energy and electricity utilities, to train technicians from the member countries in the Caribbean and to exchange experiences.

In the case of electricity utilities, the Venezuelan Government may be providing the collaboration of professionals and/or funding.

SUBMISSION OF THE REPRESENTATIVE FROM
THE PAN AMERICAN HEALTH ORGANIZATION/
WORLD HEALTH ORGANIZATION
(PAHO/WHO)

A Note on PAHO/WHO Policy and Activities in
Science and Technology for Health

by

Dr. D.W. Heinemann,
PAHO/WHO Office of Caribbean Programme Co-ordination

There is widespread disenchantment with many aspects of health care throughout the world. The reasons are not difficult to discern. Better health could be achieved with the technical knowledge available. Unfortunately, in most countries this knowledge is not being put to the best advantage for the greatest number. Health resources are allocated mainly to sophisticated medical institutions in urban areas. Quite apart from the dubious social premise on which this is based, the concentration of complex and costly technology on limited segments of the population does not even have the advantage of improving health. Indeed, the improvement of health is being equated with the provision of medical care dispensed by growing numbers of specialists, using narrow medical technologies often for the benefit of the privileged few. People have become cases without personalities, and contact has been lost between those providing medical care and those receiving it. To complicate matters, health systems are all too often being devised outside the mainstream of social and economic development. These systems frequently restrict themselves to medical care, although industrialization and deliberate alteration of the environment are creating health problems whose proper control lies far beyond the scope of medical care.

Thus, most conventional health care systems are becoming increasingly complex and costly and have doubtful social relevance. They have been distorted by the dictates of medical technology and by the

misguided efforts of a medical industry providing medical consumer goods to society. Even some of the most affluent countries have come to realize the disparity between the high care costs and low health benefits of these systems. Obviously it is out of the question for the developing countries to continue importing them. Other approaches have to be sought. Countries of the Caribbean have found this new approach to Health Care Development in adopting the Primary Health Care (PHC) strategy.

Primary Health Care

The Alma-Ata Declaration, endorsed by Caribbean Governments, states that at least the following should be included in primary health care:

Education concerning prevailing health problems and the methods of preventing and controlling them;
promotion of food supply and proper nutrition; an adequate supply of safe water and basic sanitation;
maternal and child health care including family planning; immunization against the major infectious diseases; prevention and control of locally endemic diseases; appropriate treatment of common diseases and injuries; and provision of essential drugs.

This new strategy of Primary Health care is a practical approach to making essential health care universally accessible to individuals and families in the community in an acceptable and affordable way and with their full participation. It has social and developmental dimensions and if properly applied will influence the way in which the rest of the health system functions. All levels of the health system should review critically their methods, techniques, equipment and drugs, with the aim of using only those technologies that have really proved their worth and can be afforded. For primary health care this is vital, because there has been a tendency to concentrate on medical technologies that are more appropriate for hospital use than for front-line care. The scope and purpose of primary health care, and the technical capacity of those who provide it, make it more important than ever to have effective and other innovative technologies available.

Policy and Programmes

In general: PAHO interest in Science and Technology is two-fold:

- PAHO is interested in those Science Methodologies that could be applied to health;
- PAHO will promote the use of Science Methodologies to decide which technologies are really effective and appropriate to meet health needs.

PAHO Health technology programme represents the systematic application of scientific knowledge utilizing processes, techniques, methodologies, equipment, and institutions for the purpose of improving the health conditions and well being of the population. The technology, therefore, forms part of all programmes, projects and health activities.

PAHO aims at helping its member countries to become self-reliant in the administration of effective, appropriate and economical technologies in accordance with the needs of their health programmes.

The fundamental objective is to promote and support the development, evaluation, adaptation, use and control of effective appropriate health technology so that the systems and services can have the advantage of it and use it in their programmes for protection, prevention, diagnosis, treatment and rehabilitation. The overall objective is to attain a high level of health for the entire population in keeping with the goal of Health for All by the Year 2000. This can be achieved through the following components of the programme:

- (a) promotion of technology in the health services,
- (b) laboratory services,
- (c) essential medicines and drugs,
- (d) production and quality control of biologicals, and
- (e) administration of health technology.

The strategies to be followed are the establishment and co-ordination of policies for the development and evaluation of technology, identification and support of national entities so as to ensure the establishment of national and regional networks of

participating centres, intersectoral analysis of health determinants, and the development of projects, in accordance with the foregoing analysis, to overcome problems identified.

Special emphasis is being given to ensuring the availability of essential medicines and vaccines in the basic health services, since the appropriate use of these inputs represents the application of a technology of immediate impact on the health conditions of the people. For this purpose, activities are being promoted at the subregional and national levels for the development and strengthening of pharmaceutical supply systems in all their aspects, from selection and production up to distribution, prescription and use of medicaments. The programme collaborates with subregional agencies such as CARICOM, which has taken important initiatives in this field, particularly in relation to the acquisition of medicaments at attainable prices and the quality control of these medicaments. The identification and support of institutions^{1/} and other national resources will serve as a basis for the establishment of collaborative networks and reference centres, which will make it possible to move towards self-reliance in the subregion in terms of the pharmaceutical sector.

Examples of Special Programme Areas in the Caribbean

- I. Mother and Child Health
- II. Training of new types of health workers
- III. PAHO's role in TCDC

I. MOTHER AND CHILD HEALTH

1. Expanded Programme on Immunization (EPI)

The EPI confronts dual challenges: to reduce morbidity and mortality by providing immunization for all children of the subregion by 1990 and to develop immunization services in consonance with other health services, particularly those directed towards mothers and children, so they can mutually strengthen the approach of Primary Health Care.

^{1/} e.g. - Caribbean Drug Testing Laboratory
- Barbados Drug Service

Immunizations are being provided against 6 major killers: diphtheria, whooping cough, tetanus, measles, poliomyelitis and tuberculosis to reduce death or disabling by paralysis, blindness, deafness or mental retardation. Science and Technology forms part and parcel of the following EPI activities:-

A: Systems

- Improvement of the cold chain at country level
- Technical exchanges with vaccine suppliers
- Equipment maintenance and spare part distribution
- Intercountry collaboration on the cold chain

B: Training

- In planning and managing of EPI at senior, middle and basic level
- Repair and maintenance of cold chain equipment.

C: Equipment

An equipment test facility has been established in the region to test refrigerators, freezers, cold boxes, ice-makers and ice-pack freezers utilizing electricity, gas, kerosene and solar energy.

2. Breastfeeding

Breastfeeding is an unequalled way of providing ideal food for the healthy growth and development of infants; it forms a unique biological and emotional basis for the health of both mother and child; the anti-infective properties of breastmilk help to protect infants against disease and there is an important relationship between breastfeeding and child-spacing. This makes it a key aspect of self-reliance, primary health care and current development approaches.

3. Oral Rehydration Therapy (ORT)

The leading cause of infant and childhood mortality remains acute diarrhoeal diseases. Elimination of diarrhoea as a public health problem often must await long-term socio-economic improvements; the mere provision of potable water and sanitary facilities have not had the expected dramatic impacts. Virtually all

diarrhoeal deaths can be prevented, provided life-saving rehydration therapy is readily available and administered promptly. Now, for the first time, extending such therapy to all those in need, is becoming increasingly feasible, thanks to a remarkable technology breakthrough:

a simple glucose-electrolyte fluid consisting of 3 anorganic salts plus glucose dissolved in water could be used for (rehydration) treatment of acute diarrhoea in all ages regardless of the cause of the diarrhoea. It should be recalled that the traditional mode of treatment for acute diarrhoea dehydration is intravenous fluid therapy.

This new technology has taken the treatment from the health institutions into the communities at a cost which is a fraction of that for traditional treatment.

II. TRAINING OF NEW TYPES OF HEALTH WORKERS TO ADMINISTER PHC

1. Training of Family Nurse Practitioners

At a subregional Training Centre Nurse-midwives of the Commonwealth Caribbean are being provided with expanded clinical and nursing skills in health assessment, diagnosis and management and treatment of common health problems as essential elements in meeting the needs of their communities in primary health care; course duration is 10 months.

The main purpose is to increase the availability and utilization of preventive community based health services by the population through preparing nurses to assume nursing roles with additional responsibilities.

2. Training of Community Health Aides

3. Training of Animal Health Assistants (AHA) and Veterinary Public Health Assistants (VPHA)

Community based veterinary auxilliary personnel being trained (2 years) for 17 Caribbean Governments since 1975; so far 212 boys and girls graduated.

III. PAHO'S ROLE IN TCDC

<u>ROLE</u>	<u>ACTIVITIES</u>
1. <u>Promotional</u>	1.1. Identify potential 1.2. Bring parties together 1.3. Organize training 1.4. Collect, process and disseminate information
2. <u>Supportive</u>	2.1. Design programmes, projects and activities 2.2. Executive joint projects 2.3. Strengthen subregional/ national institutions
3. <u>Financial</u>	3.1. Co-finance projects 3.2. Mobilize external resources 3.3. Tap other resources

A SUMMARY OF THE SUBMISSION OF THE REPRESENTATIVE FROM
THE UNITED NATIONS CENTRE FOR SCIENCE AND TECHNOLOGY
FOR DEVELOPMENT
(UNCSTD)

25 July 1983

A Note on Subregional and Regional Co-operation
in the implementation of the Vienna Programme of Action
with particular reference to the Caribbean region

The Vienna Programme of Action sets forth the requirements for specific actions to be taken, inter alia, at the subregional and regional levels. It makes several recommendations designed to strengthen scientific and technological co-operation among developing countries at the subregional and regional levels, including establishment of joint industrial projects, skilled manpower inventories relating to the exploration and utilization of their natural and other resources. It also calls for rationalization and strengthening of the existing regional and subregional research and development institutions and joint studies on the causes, scope and repercussions of the drain of qualified personnel from developing to developed countries. Within the United Nations System, it calls for the decentralization of the decision-making process for the strengthening of the regional commissions by entrusting to them the realization of their subsidiary machinery in the field of science and technology, assumption of the role of team leadership for science and technology co-operation programmes at the regional level, the provision of inputs for the policy-making process of the Intergovernmental Committees and the responsibility for supporting developing countries, at their request in identifying projects and preparing programmes for the promotion of science and technology co-operation among those countries.

The General Assembly endorsed the recommendations of the Vienna Programme of Action and established the Intergovernmental Committee on Science and Technology for Development, open to the participation of all States with wide-ranging responsibilities to ensure the effective

implementation of the recommendations. One of the responsibilities relates to the preparation of an operational plan for carrying out the Programme of Action. One of the major undertakings that the Committee has been engaged in since its establishment was the process of concretizing the recommendations of the Vienna Programme of Action into specific operational activities. As part of this process, it adopted an operational plan as the framework for further actions and identified the following eight major programme areas:

Programme Area 1: Scientific and technological policies and plans for development;

Programme Area 2: Creation and strengthening of scientific and technological infrastructure;

Programme Area 3: Choice, acquisition and transfer of technology;

Programme Area 4: Development of human resources for science and technology;

Programme Area 5: Financing of science and technology for development;

Programme Area 6: Scientific and technological information;

Programme Area 7: Strengthening of research and development in and for developing countries and their linkage to the production system;

Programme Area 8: Strengthening of co-operation in the field of science and technology among developing countries and between developing and developed countries.

The Committee also identified under each programme area, areas of concentration which could serve as a basis for formulation of operational activities. The operational plan, adopted by the Committee, also contains several operational activities which were designed to provide guidance to the United Nations System on the support needed by the Governments as well as by subregional, regional and interregional organizations in their efforts to implement the Vienna Programme. These were conceived in an intersectoral context and presented in such a way that possible linkages between the organs, organizations and bodies of the United Nations System, are easily recognizable although no attempt to assign specific functions to the bodies of the United Nations System was made. Most of the activities proposed require initiatives at national, subregional, regional and interregional levels.

The operational plan also assigned a focal role to the regional commissions in the preparation and implementation of national and regional scientific and technological development activities. As regards financing science and technology for development, the plan called for the review of subregional sources and mechanisms of scientific and technological financing, consultations with regional and international financing institutions and the diversification of mechanisms for financing so as to generate additional resources for the implementation of the Vienna Programme.

The Intergovernmental Committee, which was expected to meet normally once a year, has had five sessions so far. At its fifth session, which was held last June, the Committee adopted several important decisions on substantive matters. It approved some guidelines for the formulation of projects and programmes for the implementation of the Vienna Programme, thus culminating a process that it began when it called for the formulation of an operational plan for carrying out the recommendations of the Vienna Programme. These guidelines are designed to assist Member States and the organizations of the United Nations System in formulating specific projects and programmes oriented towards creating and strengthening endogenous scientific and technological capacities in developing countries. Subregional bodies like the Caribbean Council for Science and Technology could take advantage of these guidelines in assisting developing countries in the formulation of projects and programmes.

As part of the task of suggesting guidelines to the Committee, the Centre for Science and Technology for Development had sent a questionnaire to all Governments seeking relevant information. A detailed note on this subject insofar as the countries in the Caribbean region is concerned has been prepared by the Centre.

Another important aspect that the Committee has been engaged in during the past couple of years relates to formulation of joint activities in science and technology for development as an important component of bringing about closer co-ordination and co-operation among the organizations of the United Nations System in their efforts

to support the creation and strengthening of endogenous scientific and technological capacities in developing countries. Following a request from the Committee, the Administration Committee on Co-ordination Task Force on Science and Technology for Development, which was specifically established following the recommendations of the Vienna Programme, formulated these joint activities, established four technical working groups to examine specific fields of joint activities. The Working Groups recommended 24 joint activities, which were focussed and oriented towards endogenous capacity building in developing countries. The Task Force endorsed these joint activities and also agreed on the modalities and mechanisms required for facilitating speedy and effective execution in developing countries. These joint activities are expected to be implemented in developing countries. While the organizations of the United Nations System relied largely on their own knowledge and perceptions of the problems and needs in developing countries, it was recognized that more direct consultations with developing countries would be needed before these projects are finalized and submitted, whenever necessary, to appropriate funding bodies. The Administrative Committee on Co-ordination, composed of the Executive Heads of all the organizations within the United Nations System and presided over by the Secretary-General of the United Nations, had recognized that these joint activities constitute an important contribution to the implementation of the Vienna Programme of Action and to joint planning and joint programming in science and technology. The ACC also decided that the organs, organizations and bodies of the United Nations System should, to the maximum extent possible, mobilize existing resources from within their regular budgets and that, whenever necessary, extrabudgetary resources should also be sought from external funding sources.

For each joint activity, the Task Force had designated one or more organizations as lead agencies. The primary responsibility for taking all necessary measures towards their implementation rests with these lead agencies in co-operation with other participating organizations. The lead agencies would also undertake consultations with developing countries so as to more fully reflect their needs and priorities. The Centre for Science and Technology for Development provides the Secretariat support to the ACC Task Force in the formulation of the joint activities as part of its responsibilities relating to co-ordination in the field of science and technology. The Task

Force had requested the Centre to continue to play a catalytic co-ordinating role in the follow-up and implementation of the joint activities. The Executive Director of the Centre had addressed all the national focal points in developing countries with a request to provisionally indicate their interest in any of the joint activities so that this information could be collected and co-ordinated and passed on to the concerned lead agencies which would in turn get in touch with the concerned developing country to undertake more detailed consultations on the individual joint activities. It is the expectation that all the 24 joint activities would be supported by one or more developing countries and in fact sponsored by them for submission to appropriate funding bodies. In other words, once these projects are supported and sponsored by developing countries, they would, in effect, cease to be joint activities formulated by the organizations of the United Nations System; they would become either national or intercountry projects. The members of the Caribbean Council might wish to give consideration to this aspect and reply to the letter from the Executive Director indicating their interest in one or more of the joint activities. It may be stated that all regional commissions, including the Economic Commission for Latin America (ECLA), were always invited to all the meetings of the Task Force as well as to the meetings of its working groups. Some of the regional commissions had also participated in the meetings of the working groups as well as the Task Force. To the extent possible, the subregional and regional dimension was taken into account in the formulation of the joint activities.

While the invitations to the meetings of the Task Force and its working groups were sent to the Regional Commissions, it was not possible to disseminate this information to subregional bodies like the Caribbean Council. It might be useful to consider appropriate mechanisms in future that would facilitate this information and knowledge being communicated to subregional bodies also, without prejudice in any way to the central role of the Regional Commissions in their respective regions.

While the letter from the Executive Director to the national focal points in the Caribbean Region contains some basic information on the 24 joint activities, a brief note containing this information is also attached^{1/} for the information of the Caribbean Council. The Council might wish to examine this collectively and identify those joint activities which it considers to be of special importance and relevance to the Caribbean region. This would greatly facilitate the process of the follow-up and implementation of these projects in the Caribbean region.

Another function of the Intergovernmental Committee assigned to it by the General Assembly was to initiate arrangements for the early identification and assessment of new scientific and technological developments which may affect adversely the development process as well as those that may have specific and potential importance for that process and strengthening of the scientific and technological capacity of the developing countries. The Centre prepared a project profile on the establishment of an Advance Technology Alert System (ATAS). This matter was also considered by the ACC Task Force and supported. At its fifth session, the Committee approved the establishment of the Advance Technology Alert System, including the issuance of a semi-annual publication in collaboration with concerned United Nations organizations. It was gratifying that a preparatory meeting on New Technologies and Implications for Caribbean Development was held in Kingston, Jamaica, on 23 and 24 May, this year. The conclusions and recommendations of that meeting are very valuable and would be fully taken into account by the Centre in carrying forward this task.

One of the most important recommendations of the Vienna Programme of Action related to the request to the Intergovernmental Committee to establish procedures and mechanisms which would ensure adequate and effective provision of scientific and technological expert advice to it. Following this recommendation, an Advisory Committee on Science and Technology for Development was established, composed of distinguished scientists and technologists from all over the world, with a view to providing high-level advice and assistance to the Committee in the implementation of the Vienna Programme of Action. The Advisory Committee has so far held three sessions and has accomplished a great deal of substantive work which has been appreciatively recognized by

^{1/} Proposed Joint Activities by Programme Area (attached).

the Committee. The Advisory Committee also established ad hoc panels to examine specific subjects like integrated application of emerging and traditional technologies for development and human resources development for the planning, management and implementation of science and technology programmes in developing countries. The mechanism of establishment of ad hoc panels was considered to be useful and successful and it is proposed to continue this in the future in a selective manner. One of the major recommendations of the Advisory Committee relates to what it calls "pioneer projects" which were formulated by the ad hoc panels. These projects were designed as illustrative examples in specific technical fields such as micro-electronics, computers, biotechnology, solar technology and other forms of renewable energy. The Intergovernmental Committee, at its fifth session, invited interested Governments to take steps towards the formulation and implementation of these projects with the co-operation and support of other concerned developing and developed countries. The Council might wish to consider these projects and to take necessary steps towards their implementation insofar as they are relevant to the needs and conditions of the Caribbean region. The Centre for Science and Technology for Development also stands ready to provide any further clarification or assistance in this regard.

To sum up, subregional bodies, in close collaboration with the respective regional commissions have an important role to play in the process of the implementation of the Vienna Programme of Action and its operational plan, particularly in bringing about closer and more harmonized co-operation among the developing countries of the subregion. Joint initiatives and joint projects can optimize the utilization of common resources and fulfil common or respective needs. It is gratifying that the Caribbean Council has already taken several initiatives in this direction. The guidelines adopted by the Intergovernmental Committee and the joint activities formulated by the ACC Task Force could assist this process. The Council, through the Economic Commission for Latin America could also be appropriately involved in the formulation of future joint activities. The Centre for Science and Technology for Development, in line with its mandate as the

co-ordinating body and as the substantive Secretariat of the Intergovernmental Committee on Science and Technology for Development, in close co-operation with the Economic Commission for Latin America, stands ready to support and assist the efforts of this Council to mobilize science and technology as an important tool of development of its Member States.

PROPOSED JOINT ACTIVITIES BY PROGRAMME AREA
(UNCSTD)

Scientific and technological policies
and plans for development
(Programme Area 1)

1. Interregional study of the implication of new micro-electronics technologies for developing countries in selected sectors.
2. Identification and assessment of the implications of new energy technologies for developing countries.
3. Interregional assessment and strengthening of remote sensing applications technology in developing countries.
4. Evaluation of technological infrastructure requirements for coastal and marine development.
5. Joint advisory services in strengthening the capacity of developing countries in science and technology for development in a Latin American country.
6. Determination of science and technology inputs required for promoting socio-economic development and employment in rural areas in the Latin American region.

Creation and strengthening of scientific
and technological infrastructure
(Programme Area 2)

1. African regional network for agricultural tools and equipment.
2. Improvement of traditional low-cost building materials.
3. Upgrading and effective utilization of traditional technologies for food conservation and processing.
4. Upgrading traditional technologies in low-cost rural transportation.
5. Development and manufacture of production machinery and equipment for upgrading traditional rural technologies in least developed countries of Asia and the Pacific.

Choice, acquisition and transfer of technology
(Programme Area 3)

1. Training activities in the field of policy-making in science and technology for development in the Asia and Pacific region.
2. Determination and testing of indicators of technological development.

Scientific and technological information
(Programme Area 6)

1. National nodes for the global network of scientific and technological information (a pilot project).
2. Directory of major information services in science and technology.
3. International standards for information handling in support of the establishment of the global network of scientific and technological information.
4. Development and use of a generic indexing vocabulary in support of the establishment of the global network of scientific and technological information.
5. General framework for a stepwise design of the global network of scientific and technological information.
6. A framework for information exchange for science and technology policies.

Strengthening of research and development in and for developing countries and their linkage to the production system
(Programme Area 7)

1. Enhancement of research and development capacities and linkages with the productive sectors in developing countries.
2. Utilization and commercialization of publicly funded and supported research and development.
3. Formulation of appropriate strategies for facilitating pharmaceutical supplies to developing countries.
4. Utilization and commercialization of United Nations System funded research and development for the benefit of developing countries.

Strengthening of co-operation in the field of
science and technology among developing countries
and between developing and developed countries
(Programme Area 8)

1. Scientific and technological co-operation among
developing countries in technology services.

SUBMISSION OF THE REPRESENTATIVE FROM THE
UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
(UNIDO)

Science and Technology Activities of the
United Nations Industrial Development Organization
in the Caribbean region

1. UNIDO initiated the establishment of the Caribbean Technological Consultancy Services (CTCS) together with the Caribbean Development Bank. The concept of the CTCS is conceived as a mechanism by which knowledge and skills already accumulated but scattered throughout the region be mobilized and applied to respond to the need of Caribbean industries. The CTCS project is being efficiently managed by the CDB with satisfied clients. UNIDO intends to present the case of the forthcoming panel meeting of the Advisory Committee on Science and Technology for Development to be held in Lima, Peru in September 1983.
2. UNIDO also established the Technological Information Exchange Network (TIEN) for Industrial Development Finance Institutions (IDFI) through a preparatory meeting of directors of IDFI's held in January 1982 in Bridgetown, Barbados. Through TIEN, development banks can exchange information for the technological evaluation of projects submitted for financing. A high level expert meeting of selected IDFI's is planned for late 1983, in order to make the network fully operational.
3. UNIDO organized, together with the National Science and Research Council of Guyana, a National Seminar on Technology Transfer Management and Industrial Development in Georgetown, in February 1981. The purpose of seminars like these is to stimulate action by developing countries at the national level for the adoption of technology policies and plans, sensitizing them on the issues involved and providing the necessary conceptual and methodological basis for the national action. A seminar on the Strengthening of National Capabilities in the Field of Development and Transfer of Technology

was held in the Dominican Republic in March 1980, and a similar one is scheduled to be held in Trinidad from 7 to 11 November 1983, in co-operation with CARIRI and the local UNDP Office.

4. In view of the energy situation in the developing countries within the context of their overall industrialization efforts, the subject of new and renewable sources of energy has become increasingly highlighted. UNIDO already organized two seminars on mini-hydropower generation: one in Nepal in 1979; and one in China and the Philippines in 1980. UNIDO also assisted in the establishment of a Regional Centre for Research and Training in Small Hydropower in Hangzhou, China, following the recommendations of the above two meetings. UNIDO is ready to assist, upon request, with the establishment of mini-hydropower generation in the Caribbean region, including site surveying, local manufacturing of equipment, research and development, training, information, services etc.

In this respect, UNIDO takes part in the project "Regional Renewable Energy Development Station", together with the CARICOM Secretariat, the Caribbean Development Bank and the CCST, UNIDO assisted a CARICOM mission to visit and establish contacts with relevant agencies in several European countries. A follow-up of this mission is anticipated for August 1983, when the feasibility study presently elaborated by ENERPLAN for CARICOM is completed. UNIDO is hoping to fully support the initiatives and expects to assist in the execution of some of the projects at the proposed station.

5. The UNIDO-Programme on Technological Advances was designed to increase awareness of decision-makers in developing countries through early identification and assessment of new technologies and their implications on the socio-economic development of these countries. In addition to studies, expert meetings and information bulletins, emphasis has been laid on international co-operation of science and technology institutions, promotion of national science and technology strategies and technical assistance as required by developing countries.

At the International Forum on Technological Advances and Development held in Tbilisi, USSR, from 12 to 16 April 1983, the International Experts discussed the implications of technological developments in the following areas:

relevance to INTIB^{*}; and informatics as a feature of industrial technologies in any sector of industry, a factor which has to be taken into account in the proper selection of advanced technology.

An expert group meeting on Implications of Micro-Electronics for the ECLA-region was organized by UNIDO in co-operation with ECLA, in June 1982 in Mexico, at which the socio-economic implications of micro-electronic advances were analyzed and a Co-operative Latin American Programme of Action in the field of micro-electronics recommended.

7. The implications of advanced technologies on the Caribbean economies will be discussed at the forthcoming Caribbean Regional Workshop on Emerging Technologies in early 1984. The main objective of this workshop is the sensitization of high level politicians on emerging technologies, especially in the agricultural and agro-industry field, and on the applications of micro-electronics in various industries; UNIDO will give its full support to CCST and UNESCO in the preparation of this event.
8. With respect to the priority areas in science and technology identified by the Ministers' Meeting in Jamaica, UNIDO is prepared to assist the Caribbean countries in both areas, but particularly, in those of an industrial nature, such as food processing or agricultural machinery, and the application of informatics in the industrial sector. However, sponsorship with financial implications would require consideration and approval by UNIDO's Project Review Committee. UNIDO is therefore prepared to review projects proposed by CCST with information on nature of activity, output expected, inputs required, etc., after which UNIDO's contribution can be decided.

UNIDO is prepared to channel funds through CCST when projects are approved and funds become available.

* - INTIB: UNIDO's Industrial and Technological Information Bank.

- genetic engineering and biotechnology
- micro-electronics
- materials technologies
- petrochemicals
- energy from biomass and solar photovoltaic cells

The expert meeting concluded that there exists a wide scope for the application of new technologies in developing countries, and it was recommended that each country should establish appropriate mechanisms to monitor and assess technological trends, especially in view of the lead time required for development of requisite technological capabilities, and to avoid the expensive and inappropriate imports of products and technologies. In addition, the Forum requested UNIDO:

- i) to examine the possibility of convening a technology summit at the highest policy level,
- ii) to work further on the concept of Technologies For Humanity involving the designation of a limited number of new advanced technologies to meet particular needs of a clear and urgent character to the human community.

6. With respect to genetic engineering and biotechnology which have important implications on developing countries especially in the field of agriculture, UNIDO promotes the establishment of an International Centre for Genetic Engineering and Biotechnology (ICGEB) which will provide training, research, application and information on technological advances in genetic engineering and biotechnology. It is expected that the Plenipotentiary Meeting on Ministerial level on the Establishment of the ICGEB, which will be held at Madrid, Spain, from 7-13 September 1983, will sign the final document for establishing the Centre as well as decide on its location.

In the field of Micro-Electronics, UNIDO co-operates with the Intergovernmental Bureau for Informatics (IBI) in the preparation of the Intergovernmental Conferences on Strategies and Policies for Information (SPIN) which cover such areas as applications of informatics; informatics as a sector of industry per se, and hence of

SUBMISSION OF THE REPRESENTATIVE FROM THE
UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
(USAID)

Statement by
Dr. H.A. Minners, Science Adviser
Agency for International Development
Washington, D.C., U.S.A.

Mr. Chairman, Fellow Representatives, Colleagues,
I welcome this opportunity to participate in today's meeting of agencies with common interests in science and technology. Such a meeting has very great meaning to the Agency for International Development because we accord very high priority to our own scientific and technological efforts.

Early in his Administration, President Reagan set a clear direction for U.S. development assistance efforts. The Administration has delineated that policy by focusing AID's efforts around a policy dialogue with host countries that promotes:

- institution building
- generation and transfer of technology
- development of private enterprise as an integrated part of economic growth and development.

Furthermore, we in AID have recently published individual policy papers on topics such as approaches to this policy dialogue, institutional development, private enterprise development, and on more technical topics such as food and agricultural development, forestry, nutrition, health, domestic water and sanitation, and basic education and technical training. Clearly, scientific and technical content is being woven through the very fabric of virtually all AID programmes.

I would like to draw your attention to a few details of two new initiatives to give you a better sense of the variety and intensity of our commitment. For example, a Bureau of Science and Technology has been established, and is headed by a widely recognized scientist, Dr. Nyle C. Brady, who was formerly Director-General of the International Rice Research Institute in the Philippines. This new Bureau is guiding an Agency-wide effort to make more efficient use of the funds available for research. This effort involves focussing Agency programmes more sharply on priority research topics, mobilizing the talents of the U.S. scientific community to address development problems, and building up the capacity of developing countries themselves to carry out research on problems that constrain their growth.

As increasing number of AID's research projects are designed to stimulate collaborative linkages between developing country researchers and their U.S. counterparts. Such research projects also seek to establish and strengthen research networks among institutions in developing countries. These networks draw on the strengths of existing national and international facilities. Thus, in addition to the fruits of the research itself, the projects will enhance the participation of scientists from developing countries in the world scientific community.

With advice from scientists in U.S. universities and the private sector, the Bureau for Science and Technology has led an exercise to establish Agency-wide research priorities in terms that will mean greater focus and substance for the totality of AID's research activities. This process is in the final consultative phases, but I fully expect that research priorities will focus on the following kinds of topics:

Agriculture

- improved production in less favorable environments, e.g., areas with deficient rainfall or steep slopes.
- crop and animal protection by the most cost-effective and environmentally acceptable means, e.g., genetic resistance, biological control, etc.

- minimum-purchased-input systems, e.g. biological nitrogen fixation; improved fertilizer, irrigation and drainage practices.
- use of livestock in mixed farming systems, including agroforestry.

In these efforts, we have well-established linkages and co-operation with the International Agricultural Research Centres.

Health and Biomedical Research

- infectious disease control, particularly
 - ..acute respiratory infections
 - ..enteric diseases and oral rehydration therapy
 - ..selected parasitic diseases, notably malaria
 - ..viral diseases

These efforts include close support and co-ordination with parallel international efforts such as the WHO Special Programme for Research and Training in Tropical Diseases (TDR) and the International Centre for Diarrheal Diseases Research - Bangladesh.

Contraceptive Development

- new and better long-acting methods
- product development and procedures, e.g., licensing, packaging, regulatory liaison, and approval.

Fuelwood

- stock development, including selection, improvement and preparation
- forest establishment, culture and management
- process implementation, e.g. land use, extension, technology transfer and management.

Finally, I would like to make brief reference to another AID research effort, this one entirely new and with new funding. In 1981, an AID Science Adviser was appointed with a mandate to undertake new and innovative research directed toward problems confronting developing countries. A new Programme in Science

and Technology Co-operation (PSTC) was started, and currently operates through a system of competitive research grants.

Part of the available funds have been granted to the U.S. National Academy of Sciences. AID's relationship with the Academy has been long-standing, primarily through a series of technical and policy workshops, and an excellent series of publications has resulted. But more recently, the NAS has been additionally able to make grants for scientific research. Mr. John Hurley is with us today and can provide more information about the NAS programme. Suffice it to say that grant support is provided to LDC scientists (only) for research in six, carefully defined areas.

In a somewhat complementary manner, the Office of the Science Adviser also has a separate programme which seeks applications for research support from both LDC and U.S. investigators. Whereas most of AID's research efforts focus on so-called "vertical" priorities such as fuelwood, energy, malaria, and biological nitrogen fixation, the Science Adviser's grants seek innovations in somewhat cross-cutting disciplines... the research itself can include plants, animals or human systems. The five priority areas of interest are:

- biotechnology/immunology
- biotechnology/plants
- chemistry for world food needs
- biomass resources and conversion technology
- biological control of selected diseases and their vectors.

There is also a series of secondary priorities which include engineering technology, earth sciences, marine sciences and genetic resources.

There is also appropriately close co-ordination with the parallel National Academy of Sciences efforts, and indeed, NAS publications have formed the basis for establishing some of these and a number of other Agency priorities in research. The competitive research grants programme makes awards after an objective peer review on the basis of scientific merit, relevance to development, innovation, and potential to build LDC capacity. In this respect, this programme resembles the research that might be supported by a university grants board or national research council.

I would be happy to provide additional information about how scientists in developing countries might apply for research support from this new programme. We are particularly pleased to be able to offer this new opportunity for scientists to compete for support of their more innovative research.

I hope my remarks have stimulated your interest in AID's new initiatives in science and technology. There are, of course, a very much wider variety of scientific efforts sponsored by AID. But I hope these serve to illustrate our truly fresh and strong commitment in this important area. We look upon meetings such as this as valuable opportunities to exchange information and, upon occasion, to learn of new initiatives that use research approaches to solve problems which impede national development.

SUBMISSION OF THE REPRESENTATIVE FROM
THE WORLD METEOROLOGICAL ORGANIZATION
(WMO)

Statement by
The World Meteorological Organization

Few of us would be here were we not convinced of the importance of our own particular area of expertise to the economic welfare of our region. We do tend to get isolated in our own ivory towers and perhaps it becomes something of a shock to discover that the powers that be, do not attribute the same level of priorities that we do. This is now very forcefully drawn to our attention in the existing very tight economic environment. International Meteorology has not escaped unscathed and Caribbean Meteorology is reeling.

The objectives of the Caribbean Council for Science and Technology (CCST) are realistic, and its statement that its work programme must be capable of giving tangible results within a given time frame etc. before endorsement, is a refreshing approach, based no doubt on the recognition of the gaps between our perception of the issues and those of the decision makers and the need to provide concrete results.

The World Meteorological Organization (WMO) by its mandate from its Members is committed to a similar approach in its operations in Meteorology, Operational Hydrology and allied sciences, and has a history of co-operation with the Scientific and Technological World. By virtue of our growing Membership in this part of the World and their increasing activities in Science and Technology, WMO will be happy to co-operate in association with its Members who are operationally involved in the areas relevant to this body.

Mention should be made of the Caribbean Meteorological Organization (CMO) which comprises of fifteen (15) English-speaking Members, eight (8) of which are WMO Members and which Organization has been pursuing activities in this realm of Science and Technology. At

present its Caribbean Meteorological Institute (CMI) apart from Training, is in association with the Caribbean Development Bank (CDB) conducting a Wind and Solar energy study for some islands in the Eastern Caribbean. An Operational Hydrology Institute for training and investigation in the field of Hydrology has just begun activities under the CMO umbrella, and is undertaking studies for Member States. The CMO would also wish to be associated with your body.

The need for co-ordination of our various activities for the purposes outlined are very solidly supported when one considers the amount of duplication known to us in the meteorological field alone as far as climatological data collection and archiving in the Caribbean is concerned. One does not have to stretch the imagination too far to visualise the many other areas in which this persists, and the tremendous waste of limited resources.

A concerted public relations programme appears also to be a must, for it is important that the public must be made aware of our utility, since in the final phase, it is their influence that dictates the priorities.

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